

# Historical Overview of *Vanilla pompona*, with an Emphasis on Central American Usage

Dawn Dean<sup>1</sup>

## Abstract

*The historical use of Vanilla pompona [V. pompona] in Central America, as separate from Vanilla planifolia [V. planifolia], has not previously been addressed in one document. This, in conjunction with globalization and the US FDA's recognition of only two species of vanilla (V. planifolia and Vanilla tahitensis [V. tahitensis]) as flavorings, has limited the public's experience of vanilla flavor diversity and led to V. planifolia becoming synonymous with "vanilla". With a narrative review methodology utilizing literature review supplemented by interview content, the use of V. pompona in Central America is traced through several centuries up until the present. It is the purpose of this paper to serve as a literary starting point to support the revival of regional interest in V. pompona.*

**Keywords:** *Vanilla pompona*, *V. pompona*, Central America, vanilla, pompona, vanilla history

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<sup>1</sup> Dawn Dean, Belize Vanilla Gene Bank, Barranco Village, Toledo District, Belize. dawn dean@gmail.com

## Introduction

*V. pompona* is a shade-loving hemi-epiphytic vine with succulent leaves. It can be found growing wild, where it is not uncommon to find a *V. pompona* that has climbed 60' (18 meters) up a tree. When the plant is cultivated it is looped around a much lower tree, for ease of hand-pollination of the flowers and picking of the beans. *V. pompona* has two flowering seasons each year, or one extended flowering season of up to six months; the vanilla beans stay on the vine for three months before ripening. The vanilla beans are yellow when picked, but during the curing process the beans turn brown. Beans are typically around 5" (13cm) and triangular in cross-section.

*V. pompona* is one of about 120 members of the *Vanilla* genus, in the *Orchidaceae* family. While there are 20 *Vanilla* species that produce aromatic vanilla beans, all of which originate in the Western Hemisphere, (Karremans et al., 2020; Piet et al., 2022) only three have been widely cultivated and sold commercially. These are: *V. planifolia*, *V. tahitensis* and *V. pompona* (Bramel & Frey, 2021; Childers & Cibes, 1948; Correll, 1953; Kevorkian, 1964; McClelland, 1919; McCormick Spice Institute, 2022; Ranadive, 2011; The Editors of Encyclopaedia Britannica, 2025; "Vanilla: Regulating Supplies of Green Gold", 2009; Weiss, 2002). The native range of *V. pompona* is from southern Mexico, through the Central American countries of Guatemala, Belize, Honduras, Nicaragua, Costa Rica and Panama, and into South America's Colombia, Guyana, Suriname, French Guiana, Venezuela and Peru (Acevedo-Rodriguez, 2005; Beringer, 1895; Childers & Cibes, 1948; Correll, 1953; Ridley, 1912; Weiss, 2002).

Because *V. pompona* has been cultivated in many places, for many years, it has many common names:

- Antilles vanilla (McCormick Spice Institute, 2022)
- Banana vanilla (McCormick Spice Institute, 2022; Vanille, n.d.)
- Baynilla Pompona (Schiede, 1829)
- Guadeloupe vanilla (Vanille, n.d; Weiss, 2002)
- Platanillo vanilla (Cameron, 2011)
- Pom-pom vanilla (Tucker, 1927)
- Pompon (Cameron, 2011)
- Pompona vanilla (Childers & Cibes, 1948; Withner, 1959)
- Pompon vanilla (Cameron, 2011)
- South American vanilla (Childers & Cibes, 1948; Withner, 1959)
- West Indian vanilla (Childers & Cibes, 1948; Withner, 1959)
- Vanillons (Ames & Correll, 1985; Childers & Cibes, 1948; Desvaux, 1848; McClelland, 1919; Vanille, n.d; Withner, 1959; Weiss, 2002)
- Vinello (Dampier, 1699; Petiver, 1695)

## Chemical Characterization of *V. pompona*

Using Gas Chromatography-Mass Spectrometry (GC-MS) and Automated Mass Spectral Deconvolution and Identification System (AMDIS) for data interpretation, Galeas et al characterized cured *V. pompona* beans from Veracruz, Mexico. The volatile profile of *V. pompona* was typical of *Vanilla* species; the most abundant compound was vanillin (45%), which is typical of both *V. planifolia* and *V. tahitensis*. Anisyl alcohol (19%) was also present in a large amount, which is similar to *V. tahitensis*.

Her team identified 123 volatile and semi-volatile compounds in *V. pompona*, 12 of which had not previously been recognized in *V. planifolia* or *V. tahitensis*. Each of these 12 compounds is found in other common foods. While all compounds identified in *V. pompona* are regularly consumed, GC-MS characterization indicates that *V. pompona* has a unique profile (Galeas et al., 2015).

## Historical Use of *V. pompona*

### *V. pompona* Use in Ancient Times

*V. pompona* was cultivated by the ancient Maya, Aztecs and Totonacs (Bramel & Frey, 2021; Lozano & Menchaca, 2018). In what is present day Belize and the Yucatan Peninsula the ancient Maya cultivated

vanilla as an economic activity (Lubinsky et al, 2008). Given the high density of *V. pompona* still growing wild in the Toledo District of Southern Belize, it is likely that *V. pompona* was cultivated by the Manche Chol Maya (Dean, 2016) who inhabited the region from at least the 1500's until 1698 (Julian Cho Society, n.d.).

### ***V. pompona Use in the 17th Century***

The pirate botanist William Dampier wrote a book about his two voyages around Central and South America. His account shows that *V. pompona* was part of a large, well-established vanilla industry by the late 1600's.

1685 - This Cod grows on a small Vine, which climbs about and supports it self by the neighbouring Trees : it first bears a *yellow Flower*, from whence the Cod afterwards proceeds. *It is first green, but when ripe it turns yellow ; then the Indians (whose Manufacture it is, and who sell it cheap to the Spaniards) gather it, and lay it in the Sun, which makes it soft ; then it changes to a Chest-nut-colour. [...] They are commonly sold for 3 pence a Cod.* [italics added] (Dampier, 1699, pp 234-235)

Dampier was describing *V. pompona*, not *V. planifolia*. He says the flowers are yellow, and the cods (beans) are harvested after they turn yellow. *V. planifolia* flowers are pale green and must be harvested unripe (Correll, 1953), before they turn yellow or they will split and not cure well (Childers & Cibes, 1948; McClelland, 1919). Widespread cultivation is evidenced by Dampier's record of vanilla being grown in Boca Toro, Costa Rica (Correll, 1953; Dampier, 1699), and in Mexico on the Bay of Campeche. Dampier intercepted Spanish galleons loaded with vanilla, this establishes the existence of Trans-Atlantic trade. (Dampier, 1699)

At about the same time, the London-based apothecary and botanist-entomologist James Petiver, in one of his numerous natural history publications, beseeched all "Practitioners in Physick or other Curious Persons who travel into these parts" to bring him samples of the leaf, flower or fruit of vinello (Petiver, 1695, p. 48).

### ***V. pompona Use in the 19th Century***

*V. pompona* was identified and named by the German botanist Christian Julius Wilhelm Schiede in 1829 (Schiede, 1829). Schiede saw *V. pompona* growing in Papantla and Colipa, both in the state of Veracruz, Mexico. By 1839 *V. pompona* was established in Guadeloupe, Martinique and Dominica (Weiss, 2002). In 1848, the inhabitants of Misantla, Veracruz, a major vanilla-producing region, tied their vanilla beans in bundles of 50 and packed them in tin boxes for transport. Frequently they would tuck *V. pompona* beans into the bundles (Desvaux, 1848).

At the 1876 Philadelphia Centennial Exhibition, the American entrepreneur Charles Elmer Hires introduced his new invention, root beer. Vanilla was an ingredient (Yates, 2005). Seventeen years later, on the 21st of November 1893 at the Pharmaceutical Meeting of the Philadelphia College of Pharmacy, Hires read aloud a paper entitled "Vanilla", detailing his recent expedition researching the plant.

After twenty years of active experience in handling vanilla, after a long and careful study of it as an article of commerce, and an intimate acquaintance of its various uses, and its growing value as an article of import, I became possessed with a desire to see it in its natural state, to ride beneath the forest where it grew, to pluck it by my own hands from its natural branch; to enjoy its sweet and delicious aroma in the land of its birth, and in general to familiarize myself with the growth and preparation of this wonderful product, which is so rapidly growing in favor as one of our 19th century luxuries. (Hires, 1894, pp. 15112-15113)

In January of 1893 Hires boarded a train in his home city of Philadelphia. A month of near constant travel elapsed before he reached Papantla, Veracruz, Mexico. He was carrying letters of introduction and thereby met Mr. Tremari, who at that time was the largest curer and shipper of vanilla in Papantla. It was with no

small thrill that on a bright clear morning in February 1893, “dressed in a thin linen suit, with a light Panama hat, and mounted upon a mustang” Hires went for his first visit to a vanilla field. His description continues as follows:

Covered with a dark green and spear shaped leaf, and hanging pendent [sic] from its interlacing branches, green pods, from four to ten inches long, and you have a picture of a vanilla vine as I first saw it in its native soil and in its highest state of cultivation. Tree after tree in this vast forest is covered with those luxuriant vines, peeping from which, in all the glory of tropical luxuriance, are countless hundreds of the long, luscious, *tapering* vanilla bean; *in circumference almost equal to a banana* and from two to three inches longer. Some of a dark green and others of a *bright yellow*, and sometimes where they grow most luxuriantly resembling bunches of bananas, apparently growing upon the native trees of the forests. The remoteness from civilization, the total absence of everything indicating care or cultivation, and the strange juxtaposition of this wealth of *ripened fruit* to the wild and unbounded woods made the scene one of the most strange and marvelous upon which the eye ever rested. [...] The plant (*Vanilla planifolia*) grows a few yards in length each year, some portions of it clinging to the tree which supports it, and some remaining loose and hanging wave-like. Its thickness is about  $\frac{3}{8}$  to  $\frac{1}{2}$  inch. It is very juicy, round and of a green color, knotty at intervals; leaves alternate shaped like spear and plump. The flower is *yellow* and has a *sweet agreeable scent*. [italics added] (Hires, 1894, pp.15112-15113)



*Vanilla planifolia* (photo credit Dawn Dean, 2025)



*Vanilla pompona* (photo credit Lester Muralles Cabral, 2025)

Visual descriptors to aid in field identification	
<i>Vanilla planifolia</i>	<i>Vanilla pompona</i>
Pale green flower	Yellow flower
Flower unscented	Flower scented
Beans round in cross-section	Beans triangular in cross-section
Beans slightly bulbous; widest at bottom tip	Beans slightly tapering; narrowest at bottom tip
Flowers predominantly in February/March	Flowers predominantly June through November
Must be harvested green/unripe to avoid splitting	Can turn partially yellow before harvesting without danger of splitting

Hires described *V. planifolia* as having a yellow flower, a sweet agreeable scent, and tapering beans - in circumference almost equal to a banana - that are left on the vine till after they turn yellow. All of these descriptors apply to *V. pompona*, but not to *V. planifolia*.

*V. planifolia*'s blossom is unscented (Childers & Cibes, 1948), whereas *V. pompona* has a "delightful fragrance". (Ames & Correll, 1985) In *V. pompona*, which is not liable to split, the pod is left on the plant until it becomes quite distinctly yellow (Ridley, 1912). Thomas McClelland (1919), a horticulturalist at the USDA Federal Research Station doing research with vanilla, said *V. pompona*, has "large yellow blossoms in contrast to the much smaller, paler, greenish blossoms of the *V. planifolia*", that *V. planifolia* is narrower at the top of the bean, as opposed to "the blossom end of *V. pompona* frequently being rather tapering" (p. 246) and that *V. pompona* "possesses a marked advantage in the ease with which it may be cured," since it does not split open when ripe and can "remain for several days on the plant" after it turns yellow. (p. 245).

Charles Hires, a businessman and authority on vanilla with "twenty years active experience handling the plant" thought he was describing *V. planifolia* when actually he was describing - with great botanical accuracy - *V. pompona*. By the time he went on his research expedition to Mexico, *V. planifolia* was established in written documents as the vanilla species of commerce. Therefore, when Hires saw a vanilla plantation, he described what he saw and assumed, mistakenly, that he was seeing *V. planifolia*.

In the 1895 article, Vanillas of Commerce, in the American Journal of Pharmacy, George Beringer reported *V. pompona* as "more widely diffused than *V. planifolia*, and its fruit has long been known as an article of commerce". He also said *V. pompona* was commercially cultivated in the islands of Guadeloupe and Martinique in the French West Indies. (Beringer, 1895, p. 613). Undoubtedly much of that production reached Europe, because, "By the late nineteenth century, 80 per cent of the 30 tonnes of vanilla reaching Europe each year came from the French colonies." (Ecott, 2004, p. 203)

### ***V. pompona* Use in the 20th Century**

By the second decade of the 20th century, the USDA had begun a vanilla research program, that included *V. pompona*, with the aim of promoting commercial cultivation of vanilla in Puerto Rico. In 1914, Horticulture Magazine showcased a large, labeled photo of *V. pompona*, and described it as a vanilla of economic value, different from *V. planifolia* and with thicker seed pods and a large yellow flower (Stewart, 1914). By 1912 pods of *V. pompona* were produced in the Singapore Botanic Gardens, where the plant had been introduced because *V. planifolia* didn't flourish (Ridley, 1912). In Dominica *V. pompona* was said to be, "well known, and largely used to flavour chocolates, creams, liqueurs, etc." (Official Guide to Botanic Gardens of Dominica, 1922, p. 49) The USDA printed a circular in 1948 describing *V. pompona* "as commonly used in smoking tobacco, soaps, perfumes, medicines, liquors and cordials" (Childers & Cibes, 1948, p. 14). In 1953 Donovan Correll, a plant taxonomist specializing in orchids, said that "vanilla beans of commerce are divided for convenience into five principal geographic types - Mexican, Bourbon, South

American (including vanillon, West Indian vanilla and pompona), Tahiti and Java. South American beans are grown mainly in the French West Indies.” (Correll, 1953, p. 293) The name “vanillon” applies to the fruit of *V. pompona* Schiede. (Latin-American Food Code Council, 1965)

By the early 20th century the French West Indies were established as the main producing region of *V. pompona* (Childers & Cibes, 1948; Correll, 1953; Kevorkian, 1964; Ridley, 1912; Weiss, 2002; Withner, 1959). In a guide to the Botanic Gardens of Dominica, *V. planifolia* is referred to as “Mexican Vanilla” (Official Guide to Botanic Gardens of Dominica, 1922) in order to distinguish it from their local vanilla, *V. pompona*. In the journal Economic Botany, Donovan Correll informed his readers that before World War II the United States imported its vanilla predominantly from France and its colonies (Correll, 1953). In the 12 years between 1933 and 1944, The French West Indies produced 265,752 pounds (120 tonnes) of vanilla, of which 189,873 pounds (86 tonnes) were imported by the United States, or 71% of their total harvest (Childers & Cibes, 1948). During the same timeframe, the US was importing between 450 and 550 tonnes (at 2,205 pounds each) of vanilla annually (Correll, 1953). While total vanilla imports from the French West Indies represented only about 1.5% of total vanilla imports to the United States during that era, and while it is not known what percentage of those vanilla beans were *V. pompona*, it can be said with certainty that many thousands of pounds of *V. pompona* beans reached American consumers.

Three decades later, in 1985, when Oakes Ames and Donovan Correll produced their well-respected, comprehensive reference guide, *The Orchids of Belize and Guatemala*, they described *V. pompona* as “Cultivated for its aromatic properties, its fruits were at one time a well-known tropical product.” (p. 60)

### ***V. pompona* Use in the 21st Century**

More recently, *V. pompona* was described as “widely cultivated in the neotropics” (Acevedo-Rodriguez, 2005, p. 434), used locally to perfume alcoholic beverages (IUCN et al., 2020), cultivated for its aromatic fruits which are used by locals (Cameron, 2011), and mostly sold locally (McCormick Spice Institute, 2022). Continuing in that tradition, in 2015-2016 Copal Tree Farm in Southern Belize established a six acre vanilla plantation that includes *V. planifolia*, but is primarily *V. pompona*. Their planting material for *V. pompona* was sourced directly from wild plants on their own land. To date, their production is used entirely within Belize, production in 2023 was 11 pounds of dry beans per acre (12.33 kg per hectare). (L. Muralles, personal communication, June 25, 2025)

In 2011 Arvind Ranadive, an authority on flavorings, and specifically vanilla flavor, who is also the owner of Premier Vanilla, wrote a chapter on Quality Control of Vanilla Beans and Extracts in the *Handbook of Vanilla Science and Technology*. One of the first points he makes is that *V. pompona* beans are not included in the standard of identity for use in the United States. Despite that, he goes on to describe the parameters used to determine the quality of *V. pompona*, *V. planifolia* and *V. tahitensis* beans, and discuss the terminology for the aromas of these three species. His treatment of vanilla as larger than *V. planifolia* and *V. tahitensis* highlights his experience of the modern vanilla industry and the contributions of these three species to vanilla flavor. (Ranadive, 2011).

According to the book *Spice Crops* published by the Centre for Agriculture and Bioscience International in 2002, *V. pompona* has been “the most widely used substitute [...] of true vanilla.” (Weiss, 2002, p. 151). It is due to the US Code of Federal Regulations defining “vanilla” as *V. planifolia* in 1977 that Weiss refers to *V. pompona* as not being true vanilla (21 C.F.R. § 169). Amplified Fragment Length Polymorphism (AFLP) analysis has recently confirmed that *V. pompona* is present within the vanilla crops in Reunion Island (Bory et al., 2008). Some Mexican plantations planted with wild Oaxacan Vanilla vines include *V. pompona*, besides *V. planifolia* (Soto Arenas & Dressler, 2010). Ken Cameron (2011) reports that a few *V. pompona* plants are interspersed among the vines of *V. planifolia* in vanilleries on the Pacific slopes of Mexico. *V. pompona* is “still found on abandoned farms” in Puerto Rico (Acevedo-Rodriguez, 2005, p. 434). *V. pompona* has continued to be the main vanilla grown in Dominica (Prevost, 2012).

In recent years, *V. pompona* has drawn the attention of flavor aficionados. Cédric Coutellier, a *V. pompona* farmer in Guadeloupe, was recognised in 2017 for his work with vanilla when he won the national Talents Gourmands competition. He considers *V. pompona* to be the traditional vanilla of Guadeloupe.

(Agroforestry and Guadeloupean Vanilla - France, 2021). Alex Atala, one of the world's leading chefs, owns the two Michelin star restaurant DOM in Sao Paulo, Brazil. His ingredient sourcing is completely local, with a focus on indigenous, pre-conquistador ingredients such as *V. pompona*, the flavor of which he describes as “smoky vanilla”. (Kapoor, 2014). Another chef working in Brazil, Simon Lau, has also popularized interest in *V. pompona*. Chef Lau grows *V. pompona* plants in the garden attached to his restaurant, Aquavit, and uses them to make dishes such as fish in a creamy vanilla sauce, or pork with a jelly made of cagaita citrus and vanilla. Chef Lau states, “In my restaurant I only use native vanilla [*pompona*].” He creates sweets, juices and infusions with *V. pompona*. (Lau, 2023) At Copal Tree Lodge in Southern Belize, Chef Yvette Ramirez has access to both *V. planifolia* and *V. pompona* because Copal Tree farm produces both. However, it is the thick oily pods and rich flavor of *V. pompona* that has captured the attention of Chef Ramirez. She uses *V. pompona* to enhance her ice creams, syrups, sorbets and pastries, noting that the flavor of *V. pompona* melds especially well with dairy and turmeric. Her signature dessert, a chocolate budino, is enhanced by the inclusion of *V. pompona*. (Y. Ramirez, personal communication, May 29, 2025)

## ***V. pompona* Role in Vanilla Breeding Programs**

Many attributes can be sought in a breeding program, such as superior or new flavors, increased yield, resistance to pests, increased tolerance of our changing environment, self-fertilizing capability, earlier production, and so on. *V. pompona* is an ideal candidate for a vanilla breeding program because it is flavorful and also heat and disease resistant. The Supervisor of the Spice Team at Copal Tree Farm in Southern Belize, Raymond Williams (personal communication, June 25, 2025) compares *V. planifolia* with *V. pompona* like this, “*Pompona* is stronger, it can take the rain, it can take the sun. *Planifolia* grows faster, and *pompona* grows slower, but *pompona* produces more of everything: more flowers, more beans.” Williams supervises work on six acres of vanilla in Southern Belize, a region that the National Meteorological Service of Belize reports to average 160” (4.06 meters) of rain per year. Williams further reports that in this climate *V. pompona* flowers in June, July and August, then slows down in September, and continues flowering in October and November.

For agricultural purposes, vanilla is grown from cuttings, because that is the fastest way to get productive plants (Childers & Cibes, 1948). Fortunately, it can also be grown from seeds (Tucker, 1927), usually in vitro. This means cross-breeding programs can create new hybrids, which can be stabilized by vegetative reproduction (Sasikumar & National Agricultural Research Institute, Guyana, 2010).

Most *V. planifolia* plants in cultivation today can be traced back to a single origin of vanilla from Papantla (Bramel & Frey, 2021), which makes the entire industry vulnerable to a pest or disease wiping out all plantations. “[*V. pompona*] deserves a second look for its agricultural potential, especially as breeding efforts to improve the Vanilla crop move forward.”, wrote Ken Cameron (2011, p. 47) a preeminent authority on the *Vanilloideae* subfamily. Technical Agronomist Lester Muralles Cabral, the Overall General Manager at Copal Tree Farm, notes that several crops in Belize are currently being affected by *Fusarium* races. Due to this, and *V. pompona*'s resistance to *Fusarium*, Muralles observes that leaning more heavily into *V. pompona* production (as opposed to *V. planifolia* production) will help ensure the sustainability of the industry in this region (L. Muralles Cabral, June 25, 2025).

Both Madagascar and the US, while outside the native range of *V. pompona* (Acevedo-Rodriguez, 2005; Beringer, 1895; Childers & Cibes, 1948; Correll, 1953; Ridley, 1912; Weiss, 2002), saw its value and invested in vanilla breeding programs involving it.

## **US Vanilla Breeding Program**

The Tropical Agriculture Research Station (TARS) at Mayaguez, Puerto Rico (formerly called the Federal Agricultural Experiment Station) was founded in 1901, by an act of the United States Congress. TARS does research to develop solutions to agricultural problems of high national priority (TARS, 2020). According to the senior plant physiologist Norman Childers, and Hector Cibes an agronomist at TARS (1948), they began the vanilla research program in 1910 with the goal of making vanilla a crop for highland farmers.



The main disease that affects *V. planifolia* is *Fusarium batatis* var. *vanillae* Tucker (Tucker, 1927). However, *V. pompona* can be infected by *Fusarium*, and still live and produce beans (Childers & Cibes, 1948; Tucker, 1927; Withner, 1959). Trials showed that when *V. pompona* plants were grown in a *Fusarium* infected vanillery, where all the *V. planifolia* had died, *V. pompona* growth continued for 12 years. The *V. pompona* plants were not immune to the disease, but “their dark green color and luxuriant growth demonstrated resistance.” (Tucker, 1927, p. 1134) At the US Federal Research Station in Puerto Rico it was observed that “*V. pompona* will grow under somewhat more adverse moisture and soil conditions than [*V. planifolia*]” (Childers & Cibes, 1948, p. 14). “*V. pompona* has been introduced to places where *V. planifolia* is difficult to grow.” (Weiss, 2002, p. 151) In fact, *V. pompona* flourishes so well in the Lesser Antilles that it has “readily established itself [in the wild] after escaping from cultivation efforts.” (Garay & Sweet, 1974, p. 47) *V. pompona* usually flowers one or two years after planting, whereas *V. planifolia* usually flowers in the third year (Childers & Cibes, 1948; Withner, 1959) and has two flowering seasons for the year, as opposed to the one season *V. planifolia* has (Correll, 1953). In Southern Belize, *V. pompona*’s flowering season is one prolonged season instead of two shorter seasons. (R. Williams, personal communication, June 25, 2025) *V. pompona* beans are larger than *V. planifolia* beans (Cameron, 2011; Schiede, 1829), and much less likely to split, which makes them easier to cure (Childers & Cibes, 1948; Ridley, 1912; Withner, 1959).

“Since the production of hybrids presented alluring possibilities, various reciprocal crosses were made [with *V. pompona*] with a view to the development of valuable strains.”, wrote USDA Horticulturalist Thomas McClelland (1919, p. 245) and by 1916 a breeding program that crossed *V. pomponas* from Guadeloupe, Panama and Mexico with *V. planifolia* was established (McClelland, 1919; Tucker, 1927), specifically in an attempt to obtain seedlings with greater resistance to vanilla root rot (Withner, 1959). By the 1930’s, the Station was a major research center for vanilla propagation, hybridization, maintenance, and harvest (Hulshof, n.d.; Withner, 1959). Vanilla seeds from *V. pompona* X *V. planifolia* were sent from the research center to the plant physiology laboratories of Cornell University in New York, where seedlings were germinated. (Jardin, 1939) By 1963 the breeding program included F1 hybrids of *V. pompona* X *V. planifolia* that were being back crossed (Martin, 1963). The Flavoring Extract Manufacturing Association of the United States participated in a cooperative project with the Department of Agriculture in Puerto Rico. The aim was to improve cultural practices and to solve problems of disease (Kevorkian, 1964).

The mission of the USDA-ARS Germplasm Resources Information Network (GRIN) is to support the national germplasm collections which conserve the genetic diversity of plants important for food and agriculture, and ensure the availability of valuable traits for future breeding and research. Collectively this is called the National Genetic Resources Program (NGRP). They have been keeping germplasm of *V. pompona* since 1917 (USDA, Agricultural Research Service, National Plant Germplasm System, 2025). That the USDA was funding a cross-breeding program with *V. pompona* as early as 1916; that the program lasted for over 60 years; and that the National Genetic Resources Program - taxed with storing germplasm important to food and agriculture - has been storing germplasm of *V. pompona* since 1917 all show that the USDA has long considered *V. pompona* to be an important botanical source of vanilla.

### ***Madagascar Vanilla Breeding Program***

In the 1950’s an interspecific hybridization program including *V. pompona* was begun in Madagascar, its goal was to control *Fusarium*. Tens of thousands of new vanilla genotypes were developed, but only a small number were selected and conserved. Among these were two exceptional hybrids - Manitra ampotony and Tsy Taitra (Grisoni & Nany, 2020). Tsy Taitra, a vigorous cultivar producing fruits larger than ¾” (10mm) in thickness and 8-12” (20 to 30cm) in length, was developed from an interspecific hybrid between *V. planifolia* and *V. pompona* that was then backcrossed to *V. planifolia* (Bory et al 2008).

### ***Madagascar Vanilla Breeding Program’s Impact on Costa Rican Vanilla Industry***

In 1993 *Fusarium* infected the Costa Rican vanilla plantations which resulted in most of the plantations disappearing (Hernandez-Hernandez, 2011). Starting in 1995, with assistance from the Costa Rican Agriculture Department, the University of Costa Rica and the foundation Holland-Costa Rica (FundeCooperación), a new effort was made at vanilla cultivation, and 82 acres (33 hectares) were



established. Unfortunately, in 1996 Hurricane Cesar destroyed them. The Agricultural Microbiology Laboratory of the Agricultural Investigation Center (CIA) at the University of Costa Rica, along with the support of the Interamerican Development Bank (IDB), the National Institute of Biodiversity (INBio), and the private support of the La Gavilana Company, initiated a project to restore the vanilla plantations. By the year 2000, the disease *Fusarium* was again ravaging plantations. As a potential solution, a new vanilla cultivar called “Vaitsy”, a hybrid with *V. planifolia* and *V. pompona* parentage, which was developed by the Investigation and Research Institute of Agriculture in Madagascar, was brought to Costa Rica. Scientists at the Costa Rican Polytechnic University in Santa Clara, San Carlos, developed vanilla plants with tissue culture. The new “Vaitsy” vanilla plants had amazing results. The plants had good *Fusarium* resistance and produced large beans, up to 10” (26cm) long with a 1.06 oz (30g) average weight per green bean.” (Quiros, 2011) “By using DNA sequence analysis, we have confirmed the hybrid origin of a Vanilla cultivar widely grown in Costa Rica. The analysis of nuclear and plastid genes from the hybrid revealed that it originated from an interspecific cross, with *V. planifolia* as the maternal parent and *V. pompona* as the paternal parent.” (Belanger & Havkin-Frenkel, 2011, p. 263). Based on the research done by the USDA and followed by Madagascar, Costa Rica is now growing a *Fusarium* resistant hybrid made with *V. pompona*. So all Costa Rican vanilla entering the US can be considered to be part *V. pompona*.

## Conclusion

*V. pompona* was brought into cultivation and commerce by Mesoamerican farmers more than 400 years ago. Sometimes it has been mistaken for *V. planifolia*, or overlooked due to market regulations. As a crop, and as a parent to a hybrid vanilla, it has been grown continuously up until present day. Chefs appreciate its unique vanilla flavor. It has horticulture properties such as *Fusarium* resistance, heat tolerance, and high productivity that make it attractive to vanilla breeding programs. *V. pompona* is part of the culinary heritage of the Central American region.

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